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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2006/0017691 A1**  
(43) **Pub. Date:** **Jan. 26, 2006**(54) **SYSTEM AND METHOD FOR  
CONTROLLING AUDIO OUTPUT  
ASSOCIATED WITH HAPTIC EFFECTS****Publication Classification**(51) **Int. Cl.**  
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(52) **U.S. Cl.** ..... **345/156**(76) Inventors: **Juan Manuel Cruz-Hernandez,**  
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**SAN JOSE, CA 95164-0640 (US)**(57) **ABSTRACT**

An apparatus, a processor-readable medium, and a method are provided that are configured to cause a haptic effect and an audio effect to be output substantially concurrently. The haptic effect has a frequency and the audio effect has a frequency different from the frequency of the haptic effect. At least one of the frequency of the haptic effect and the frequency of the audio effect is varied while maintaining substantially constant an average energy of the haptic effect. Varying the frequency of the audio effect can cause a perceived frequency of the haptic effect to change.

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